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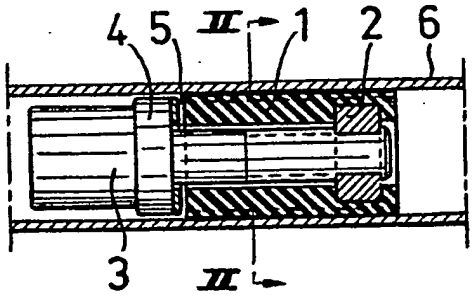
(71) Applicant: **Liljedahl, Gunnar, Alvik 7555, S-951 90 Lulea (SE)**

(72) Inventor: **Liljedahl, Gunnar, Alvik 7555, S-951 90 Lulea (SE)**

(74) Representative: **Billberg, Hans et al, JACOBSSON & BILLBERG PATENTBYRA AB Box 21113, S-100 31 Stockholm 21 (SE)**

(54) Expanding means.

(57) The invention relates to an expanding means for removable fastening in a cylindric hole, consisting of an elastic cylinder, which is caused by axial contraction to expand and with the outer surface to engage with the cylindric hole, which cylinder is formed with a plurality of bars, which extends substantially in the axial direction of the cylinder. It is a known problem that, when the expanding means is located within a hole in the form of a cylinder, problems may arise in carrying out the expanding proper of the expanding means, because it is difficult for the operator to control by a tool or the like the expanding proper of the expanding means. This problem is overcome in that the bars (7) extend from grooves (8) running in the direction of the bars in the outer surface of the cylinder (1) and outward outside the outer surface.



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Expanding means

This invention relates to an expanding means for removable fastening in a cylindric hole, consisting of an elastic cylinder, which is caused by axial contraction to expand and with its outer surface to engage with the cylindric hole, and which is formed with a plurality of bars extending substantially in the axial direction of the cylinder.

The invention is substantially intended to be used for locking in axial direction two members co-acting in a telecopic manner relative to one another. It is a known problem that the expanding movement proper can be carried out only with difficulty when the expanding means is positioned within the outer one of two such members, due to the fact, that the operator by using tools or the like has difficulties in controlling said expanding movement. This control, for example, may imply that the expanding means must be turned relative to a screw located within the expanding means and controlling the same. It is also known trying to use or attach on the outer surface of the expanding means a friction-increasing means so as with friction to abut the outer surface of the two telescopically co-acting members to such an extent, that the expanding means is prevented from turning, whereby it is possible to effect the axial contraction by turning a screw located within the expanding means. Heretofore, however, no such friction-increasing means are known in the art which ensure a sufficient friction for effecting a satisfactory contraction or, rather, to bring about by the expanding means an initial contraction in axial direction which is sufficiently strong to effect a safe fastening in the axial direction. It was found that the invention is particularly suitable for use at the adjustment of two telescopically co-acting members in the form, for example, of the length for a crutch, stick or the like. The characterizing features of the invention as defined in the attached claims solve the problem of rapidly and safely carrying out the ex-

panding of the expanding means in such a way, that the expanding means safely can be fixed against axial movement in a cylindric hole.

An embodiment of the invention is described in the following, with reference to the accompanying drawing, in which

Fig. 1 is an axial section through the expanding means and associated screw member, and

Fig. 2 is an end view of the cylinder seen from the right in Fig. 1.

The expanding means consists of an elastic cylinder 1 of rubber or similar material. At its right-hand end in Fig. 1, the cylinder includes an internally threaded piece 2. A screw 3 extends with one end through the hole through the cylinder and engages screwingly with the threaded piece 2. A shoulder 4 of the screw 3 abuts the left-hand end of the elastic cylinder 1 via a friction-reducing washer 5. By turning the screw 3 relative to the elastic cylinder 1, the cylinder is contracted in axial direction and expands.

The cylinder is positioned in a cylindric pipe 6, which thus constitutes one member of two telescopically co-acting members. The second member can be regarded to be the screw 3, which per se can be a long rod inserted in the pipe 6.

The outer surface of the cylinder 1 comprises longitudinal bars 7, which extend from grooves 8 provided in the outer surface of the cylinder and project outward outside of the outer surface. Due to their extending from grooves in the outer surface, the bars 7 are allowed to fold in radial direction, i.e. to the side, when the cylinder is being turned. Hereby a key effect arises when the bar 7 places itself against an edge of the groove 8 and against the inner surface of the pipe 6. This establishes a safe fastening between the bars 7 and the inner surface of the pipe 6, i.e. the cylinder is safely retained against rotation in the pipe 6, whereby a relative turning between the screw 3 and the cylinder can be effected, without

requiring the operator to hold the cylinder proper, but only the pipe 6 located on the outside. It is hereby understood that the expanding means can be used inaccessible for an operator as soon as at least the screw by extension with a rod in the pipe 6 or the like can be turned.

The cylinder has been described above to comprise bars 7 and grooves 8 extending in purely axial direction. It is understood, however, that deviations from the purely axial direction may occur without thereby jeopardizing the function of the invention or abandoning the invention idea. The grooves 8, further, can be designed in a different manner, and in Fig. 2, for example, the sides of the grooves 8 are shown slightly inclined so that the openings of the grooves exceed in size the bottom of the grooves.

Claims

1. An expanding means for removable fastening in a cylindric hole, consisting of an elastic cylinder, which is caused by axial contraction to expand and with the outer surface to engage with the cylindric hole, which cylinder is provided with a plurality of bars extending substantially in the axial direction of the cylinder, c h a r a c t e r i z e d i n that the bars extend from grooves running in the outer surface of the cylinder and outward outside the outer surface.

2. An expanding means as defined in claim 1, c h a r a c t - e r i z e d i n that one end of the cylinder is provided with an internal thread, and the other end is provided with a removable washer for abutting a shoulder on a screw extending through the cylinder.

3. Utilization of an expanding means as defined in claim 1 or 2, c h a r a c t e r i z e d i n that the cylinder is attached expandingly on the inside of two telescopically co-acting members.

FIG.1

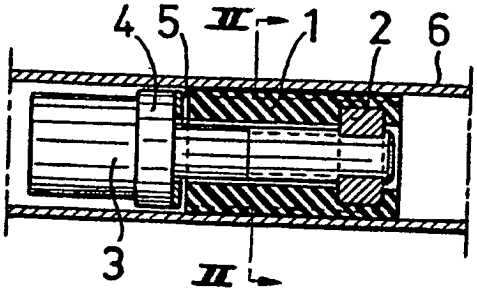
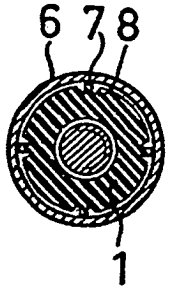


FIG.2



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EUROPEAN SEARCH REPORT

0053596

Application number

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DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.³)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	DE - A1 - 2 331 779 (HERMANUS) * Fig. 1A, 10 * --	1,2	F 16 B 2/04 F 16 B 7/04
	FR - A - 2 102 518 (LECUYER DANIEL) * Fig. 1-3 * ----	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.³)

F 16 B 2/00
F 16 B 7/00
F 16 B 13/00
F 16 B 21/00
F 16 B 29/00
F 16 B 39/00
F 16 L 57/00
F 16 F 1/00

CATEGORY OF CITED DOCUMENTS

X: particularly relevant
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

X The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
VIENNA	10-02-1982	SCHUGANICH

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